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PHYSIOLOGICAL.

The Effect of Stimulation and of Changes in Temperature upon the Irritability and Conductivity of Nerve Fibres.—W. H. Howell (*Journal of Physiology*, April 17, 1894). During an exhaustive investigation of this subject the following general facts brought out are worthy of special emphasis: 1. The method of cooling may be used conveniently to block the nerve impulse in afferent and efferent fibres whenever it is desirable to suspend conductivity. The fibres examined regain their conductivity promptly upon being warmed, with the exception, in many cases, of the cardiac inhibitory fibres of the rabbit. When the fibres are warmed slowly some varieties regain their conductivity less rapidly than others. This difference was most distinctly shown by the reflex vaso-constrictors and dilators in the sciatic. 2. The degree of temperature at which conductivity is suspended varies in different fibres. It lies somewhere between 5° C. and 0° C. The cardiac inhibitory fibres of the rabbit offer at least one exception, since they lose their conductivity at as high a temperature as 15° C. 3. A nerve impulse in passing into a stretch of fibre of different temperature may suffer an increase or a diminution in force, according as the temperature of this portion of the nerve is above or below that in which the impulse originated. Thus, in the motor and vaso-constrictor fibres, cooling a small area of the nerve below the point of stimulation caused a decrease in the strength of the impulses passing through it proportional to the fall in temperature, while with the vaso-constrictor fibres the strength of the nerve impulses increased in consequence of passing through an area warmer than that in which the stimulus was applied. 4. The method of cooling may be used to differentiate the physiological varieties of nerve fibres combined in a common trunk. (*a*) To separate the vaso-dilators from the vaso-constrictors in the sciatic. (*b*) To separate the reflex vaso-constrictors from the reflex vaso-dilators in the same trunk. (*c*) To separate the inhibitory fibres of respiration in the vagus from those causing augmented respirations. (*d*) To separate the effect of the cardiac inhibitory fibres upon rate from the effect upon strength of heat. 5. The difference in reaction toward cooling and heating and stimulation shown by the different physiological varieties of nerve fibres is not clearly connected with the existence of a medullated sheath or with varieties in thickness of the sheath. It depends, apparently, upon a difference in structure in the conducting portion of the fibres. 6. Vaso-constrictor and cardiac inhibitory fibres are not fatigued after continuous functional activity for an hour. 7. Certain nerve fibres lose their irritability completely or in part (stimulation fatigue) at the point of stimulation, when the stimulation (electrical) is prolonged for several minutes. This property is shown most clearly by the vaso-constrictor and sweat fibres of the sciatic nerve. Vaso-constrictor fibres at their origin from the cord and in the cervical sympathetic, when they are medullated, do not exhibit this phenomenon. A. F.

PATHOLOGICAL.

Pathological Study of a Case of Acromegaly by Professor Arnold.—(Virchow's Archiv., vol.